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GUIDE SPECIFICATION FOR CONSTRUCTION

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DEPARTMENT OF THE ARMY

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U.S. ARMY CORPS OF ENGINEERS

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GUIDE SPECIFICATION FOR CONSTRUCTION

SECTION 15710R

HOT WATER PRESSURE WASHER SYSTEM FOR MOTOR VEHICLES

03/02

NOTE: This guide specification covers the requirements for Manufacturer standard hot water vehicle washer that are used in OMS Shops. These units can be portable, fixed, or on wheels.. This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-1-8155.

Comments and suggestions on this guide specification are welcome and should be directed to the proponent of the specification. The proponent is the Louisville District Corps of Engineers, Army Reserve Support Team (RST)

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest change (Notice) to this guide specification. During the reference reconciliation process, SPECSINTACT will automatically remove references from this paragraph that have been removed from the text.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

American Society for Testing and Materials (ASTM)

ASTM B 117 (1997) Salt Spray Fog Testing

Society of Automotive Engineers, Inc. (SAE)

100 R1 High Pressure Hose, Single Wire Braided

Underwriters Laboratories (UL)

UL 1776 (7/15/1999 incl. Revisions) UL Standard for Safety High-Pressure Cleaning Machines Second Edition

1.2 GENERAL REQUIREMENTS

1.2.1 Scope

The Contractor's work shall consist chiefly of, but not be limited to, providing a high pressure wash system for the OMS Shop. The system shall be complete, tested, and ready for use with all components provided as specified herein including, but not limited to, washer unit, hose reels, heavy duty hoses, and high pressure piping. The Contractor shall route piping and install outlets where indicated on the drawings.

1.2.2 Standard Products

Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening.

1.2.3 Nameplates

Each major item of equipment shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate secured to the item of equipment.

1.2.4 Prevention of Rust

Except for stainless steel, surfaces of ferrous metal subject to corrosion shall be factory-painted with a rust inhibiting coating. After exposure to salt spray test conforming to ASTM B 117 for 120 hours for interior and 500 hours for exterior use, coating shall show no signs of wrinkling, cracking, or loss of adherence, and the specimen shall show no signs of rust creepage beyond 3mm (1/8 inch) on either side of the scratch mark made.

1.2.5 Equipment Guards and Access

Belts, pulleys, chains, gears, couplings, projecting set-screws, keys, and other rotating parts located where personnel contact is possible shall be fully enclosed or guarded. High temperature equipment and piping located within personnel contact or where a potential fire hazard exists shall be properly guarded or covered with insulation of a type specified.

1.2.6 Additional Equipment

Any valves, piping, hoses, etc. that are a part of the manufacturer's standard washer unit that are not required by this specification shall be removed completely, and all openings in the enclosure to be covered with a metal plate(s) to match the color and finish of the enclosure.

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

Indicate submittal classification in the blank space following the name of the item requiring the submittal by using "G" when the submittal requires Government approval. Submittals not classified as "G" will show on the submittal register as "Information Only". For submittals requiring Government approval, a code of up to three characters should be used following the "G" designation to indicate the approving authority; codes of "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval are recommended.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Hot Water Washer; FIO

Shop drawings shall include a complete list of equipment and materials, including manufacturer's descriptive and technical literature; performance charts; catalog cuts; certifications; drawings; and instructions necessary for installation of the hot water washer. Shop drawings shall also contain complete piping and wiring drawings and schematic diagrams; equipment layout and anchorage; and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall indicate clearance required for maintenance and operation.

SD-03 PROJECT DATA

Spare Parts Data; FIO

Spare parts data for each different item of material and equipment, after approval of the detail drawings and no later than two months prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, and a list of the parts recommended by the manufacturer to be replaced after 1 and 3 years of service.

SD-06 Test Reports

Tests,; FIO

Upon completion and testing of the installed washer test reports shall be submitted in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls.

SD-08 Manufacturer's Instructions

Washer System; FIO

Diagrams, vendor information, instructions, and other sheets describing installation and operation of the system. Include maintenance program for washer use.

SD-10 Operation and Maintenance Data

Hot Water Washer; FIO

Six complete manuals listing step-by-step procedures required for system startup, operation, shutdown, and routine maintenance, at least 2 weeks prior to field training. The manuals shall include the manufacturer's name, model number, parts list, simplified wiring and control diagrams, troubleshooting guide, and recommended service organization including address and telephone

number.

PART 2 PRODUCTS

2.1 WASHER UNIT

NOTE: Designer shall verify with the user the required capacity, temperature, and pressure for the washer unit.

Washer unit shall be a [portable][on casters][fixed] electrically driven, LP gas-fired unit capable of delivering [71] degrees C ([160] degrees F) wash water at a minimum flow rate of [0.16] L/S ([2.5] gpm) at [10,350] kPa ([1500] psi) minimum discharge pressure. LP gas tank shall be provided complete with the unit and include regulator valve. Pump, motor and controls shall be enclosed within a cabinet housing of all steel or stainless steel construction. Dimensions of the unit shall not exceed 1350mm by 625mm by 1375mm in height (54-inches by 25-inches by 55-inches in height). The steel shall be stainless steel or phosphatized and coated with a baked-on polyurethane/enamel industrial plant. Washer unit shall be certified to UL1776.

2.2 Pump

Wash water pump shall be a positive displacement, direct drive or belt-driven, triplex positive displacement pump with stainless steel poppet valves and seats. All wetted parts are to be constructed of stainless steel, hard chrome plated steel, chrome plated brass, viton and Buna N. Splash type, oil bath crankcase lubrication equipped with a window for sight check of oil level. Piston cups are viton, water lubricated on both pressure and suction strokes by unidirectional fluid flow. The pump shall be free from any requirement for external lubrication. Pump also shall be capable of withstanding an incoming water temperature of 71 degrees C (160 degrees F). Pump shall be powered by a 2.24kW (3 HP), 60 Hz, 208 volt single phase motor of the continuous duty type with permanently lubricated bearings, open drip-proof or TEFC construction and protected from thermal overload. GFCI cord attachment shall be provided. Pump and burner interlock system - unit supplied shall be equipped with a regulator equipped with a flow switch to shut burner and pump off in the event of water flow stoppage. Provide with factory mounted and wired disconnect and all necessary pre-wired controls and controls transformer. Units shall have a single point of connection for electrical power. Water pressure regulator valve will be set to regulate incoming water line pressure to 138-208 kPa (20-30 psig).

2.3 Hose and Reels

Hose reels shall be heavy-duty type. The reels shall have a hardened alloy steel ratchet to enable the operator to latch the reel at any desired point. The reels shall be provided with [15.3] [30.63] Meters ([50][100] feet) of 9mm (3/8-inch) single wire braided high-pressure hose meeting SAE specification 100 R1. Provide one spare hose for each two hose reels.

2.4 Disconnect Couplings

The high-pressure hose shall be equipped with quick disconnect couplings on both ends for connection into the discharge side of the wall piping receptacles and the trigger gun control.

2.5 Trigger Gun

Trigger gun control shall be rated at 20,684 kPa and 140 degrees C (3,000 psi and 285 degrees F). Gun control provided shall be capable of withstanding a stoppage of the pressurized hot water flow for a minimum of 10 minutes. A spare trigger gun control will be furnished with each unit. Trigger gun shall be equipped with a nozzle with a 0.262-radians (15-degree) spray pattern connected to a 3mm (1/8-inch) street 45-degree elbow and a one-meter (3-foot) extension. Connection of extension and spray nozzle to each gun shall be by quick-disconnect coupling providing a 6.28-radians (360-degree) rotation within the coupling. An additional 15 degree spray nozzle will be provided for attachment to each gun. Provide one trigger gun per floor outlet plus two spares.

2.6 Heating Coil

Heating coil provided in hot water boiler shall be a vertical type double pass-heating coil having a cold water jacket. The coil will be fabricated from Schedule 80 steel pipe.

2.7 Gas Burner

Gas burner shall be of the forced draft type with automatic electric ignition. Burner shall be thermostatically controlled. The thermostat shall be preset to maintain a minimum wash water temperature of 71 degrees C (160 degrees F).

2.8 Relief Valve

A safety relief valve shall be installed between the discharge side of the boiler and the high-pressure hose. The valve shall be set to discharge when the water temperature reaches 100 degrees C (212 degrees F). Discharge from the valve will be piped using Schedule 40 steel pipe to a point 75mm (3 inches) above the base elevation of the unit.

2.9 Piping

Piping between the washer unit and the hose reels shall be in accordance with the steel pipe requirements of SECTION 15400 Plumbing, General.

PART 3 EXECUTION

3.1 HOT WATER WASHER INSTALLATION

3.1.1 Washer Unit

Washer unit shall be installed in accordance with manufacturer's recommendation.

3.1.2 Water Supply Regulator

Adjust regulator on the incoming water line to maintain 140-200 kPa (20-30 psig).

3.2 TESTING

After the components of the washer have been properly adjusted the washer shall be tested to demonstrate that it meets the performance criteria. The tests shall include operating the washer to demonstrate the ability to deliver the quantity of water at the pressure and temperature specified. The tests shall also include the function, 10 minute minimum gun control check, boiler safety relief valve function, and operation of the pressure hose disconnects. If any piece of the equipment fails to pass the tests, the Contractor shall make the necessary repairs or adjustments and the test shall be repeated until satisfactory performance is achieved.

-- End of Section --